JP2000-92026A0

FIG.1

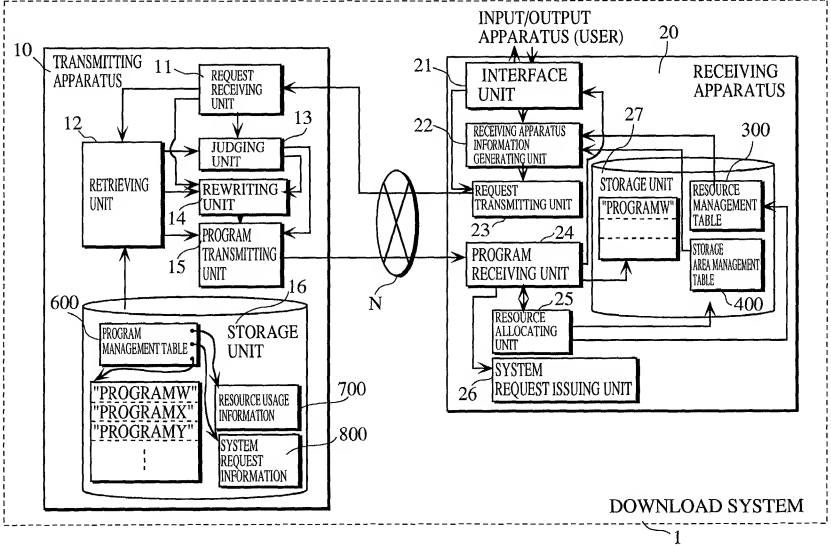

FIG. 2

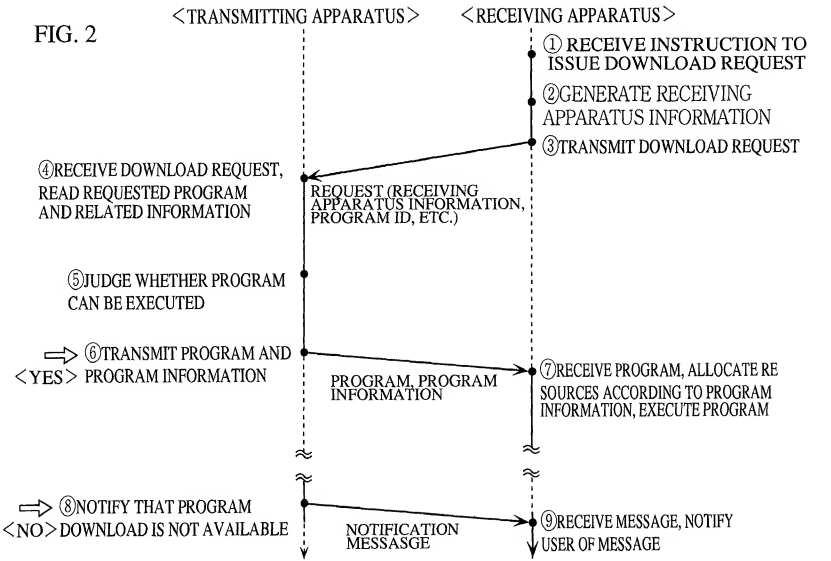
<TRANSMITTING APPARATUS>
<RECEIVING APPARATUS>
① RECEIVE INSTRUCTION TO ISSUE DOWNLOAD REQUEST
②GENERATE RECEIVING APPARATUS INFORMATION
③TRANSMIT DOWNLOAD REQUEST
④RECEIVE DOWNLOAD REQUEST, READ REQUESTED PROGRAM AND RELATED INFORMATION
REQUEST (RECEIVING APPARATUS INFORMATION, PROGRAM ID, ETC.)
⑤JUDGE WHETHER PROGRAM CAN BE EXECUTED
⑥TRANSMIT PROGRAM AND <YES> PROGRAM INFORMATION
PROGRAM, PROGRAM INFORMATION
⑦RECEIVE PROGRAM, ALLOCATE RESOURCES ACCORDING TO PROGRAM INFORMATION, EXECUTE PROGRAM
⑧NOTIFY THAT PROGRAM <NO> DOWNLOAD IS NOT AVAILABLE
NOTIFICATION MESSASGE
⑨RECEIVE MESSAGE, NOTIFY USER OF MESSAGE

FIG. 3

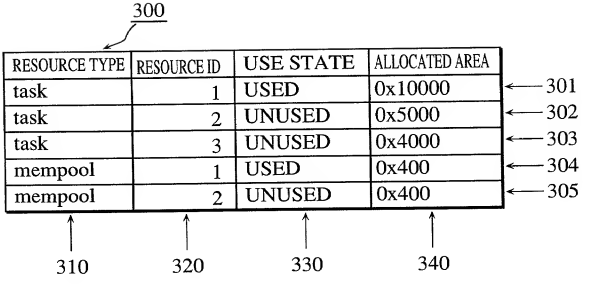
300
RESOURCE TYPE
RESOURCE ID
USE STATE
ALLOCATED AREA
task 1 USED 0x10000 301
task 2 UNUSED 0x5000 302
task 3 UNUSED 0x4000 303
mempool 1 USED 0x400 304
mempool 2 UNUSED 0x400 305
310
320
330
340

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FIG. 4

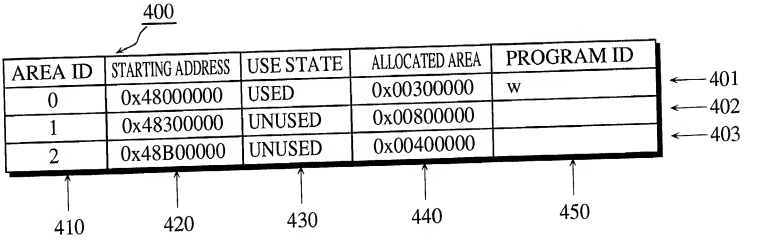

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FIG.5

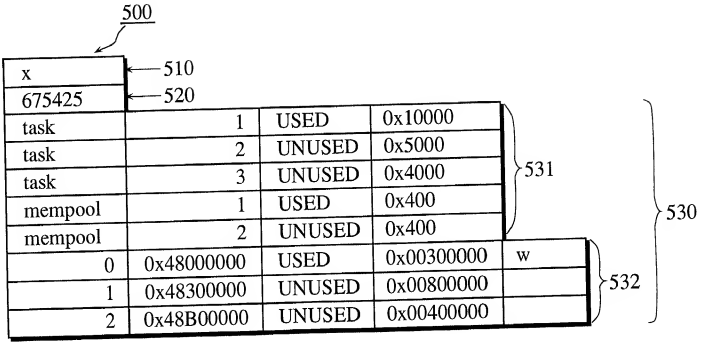

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FIG. 6

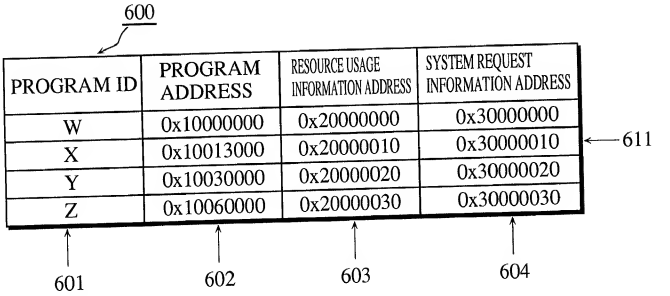

FIG. 7

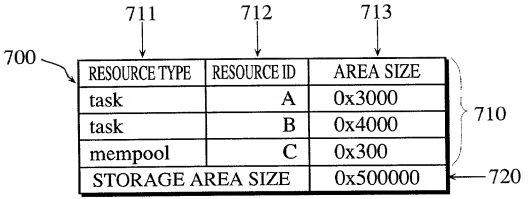
711
712
713
700
RESOURCE TYPE
RESOURCE ID
AREA SIZE
task
A
0x3000
task
B
0x4000
mempool
C
0x300
STORAGE AREA SIZE
0x500000
710
720

FIG. 8

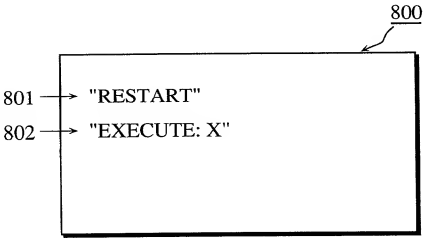
800
801
"RESTART"
802
"EXECUTE: X"

FIG. 9

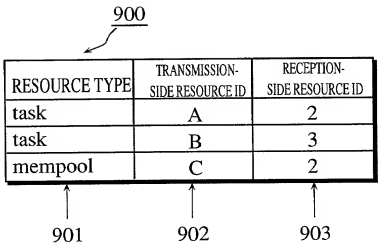
900
RESOURCE TYPE
TRANSMISSION-SIDE RESOURCE ID
RECEPTION-SIDE RESOURCE ID
task
A
2
task
B
3
mempool
C
2
901
902
903

FIG. 10

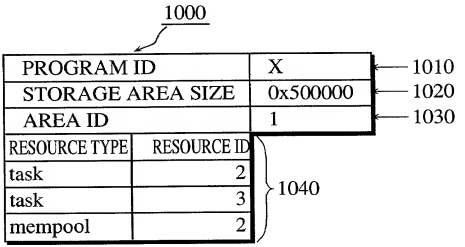
1000
PROGRAM ID
X
1010
STORAGE AREA SIZE
0x500000
1020
AREA ID
1
1030
RESOURCE TYPE
RESOURCE ID
task
2
task
3
mempool
2
1040

FIG.11A

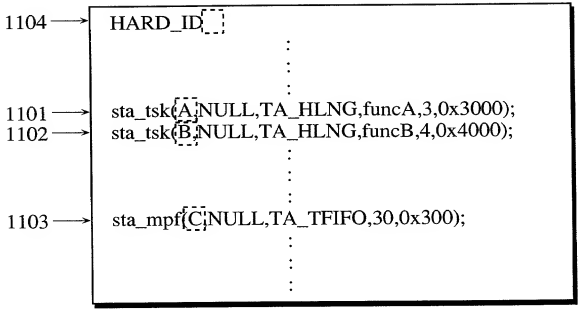

FIG.11B

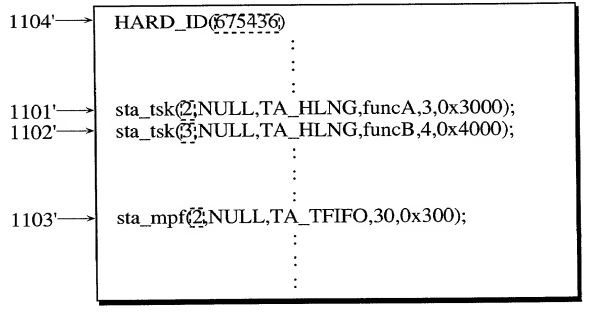

FIG. 12

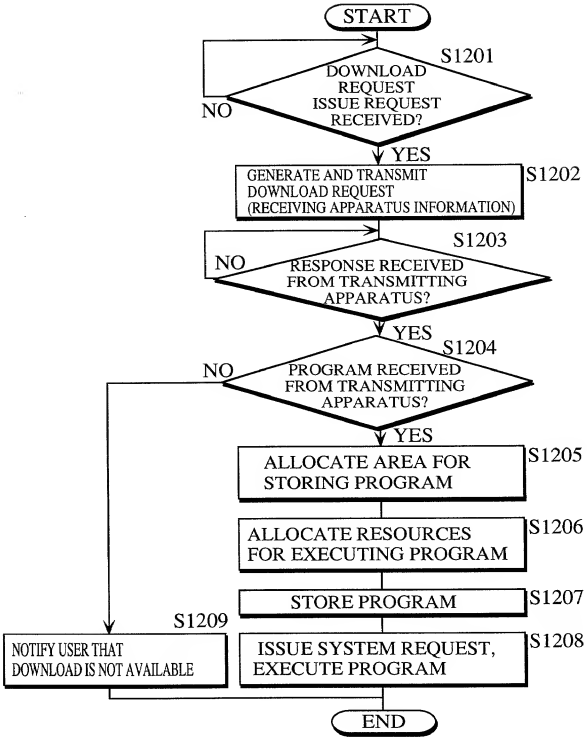

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FIG. 13

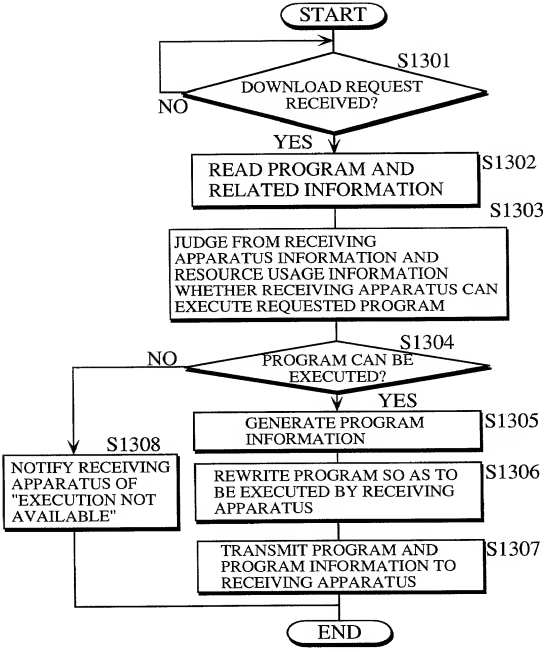
START
S1301
DOWNLOAD REQUEST RECEIVED?
NO
YES
READ PROGRAM AND RELATED INFORMATION
S1302
S1303
JUDGE FROM RECEIVING APPARATUS INFORMATION AND RESOURCE USAGE INFORMATION WHETHER RECEIVING APPARATUS CAN EXECUTE REQUESTED PROGRAM
S1304
NO
PROGRAM CAN BE EXECUTED?
YES
GENERATE PROGRAM INFORMATION
S1305
S1308
NOTIFY RECEIVING APPARATUS OF "EXECUTION NOT AVAILABLE"
REWRITE PROGRAM SO AS TO BE EXECUTED BY RECEIVING APPARATUS
S1306
TRANSMIT PROGRAM AND PROGRAM INFORMATION TO RECEIVING APPARATUS
S1307
END

FIG.14A

400

AREA ID	STARTING ADDRESS	USE STATE	ALLOCATED AREA	PROGRAM ID
0	0x48000000	USED	0x00300000	w
1	0x48300000	UNUSED	0x00800000	
2	0x48B00000	UNUSED	0x00400000	

← 1401

FIG.14B

400

AREA ID	STARTING ADDRESS	USE STATE	ALLOCATED AREA	PROGRAM ID
0	0x48000000	USED	0x00300000	w
1	0x48300000	USED	0x00500000	x
2	0x48800000	UNUSED	0x00300000	
3	0x48B00000	UNUSED	0x00400000	

← 1401

← 1402

FIG.15A

300

RESOURCE TYPE	RESOURCE ID	USE STATE	ALLOCATED AREA
task	1	USED	0x10000
task	2	UNUSED	0x5000
task	3	UNUSED	0x4000
mempool	1	USED	0x400
mempool	2	UNUSED	0x400

FIG.15B

300

RESOURCE TYPE	RESOURCE ID	USE STATE	ALLOCATED AREA
task	1	USED	0x10000
task	2	USED	0x5000
task	3	USED	0x4000
mempool	1	USED	0x400
mempool	2	USED	0x400

FIG. 16

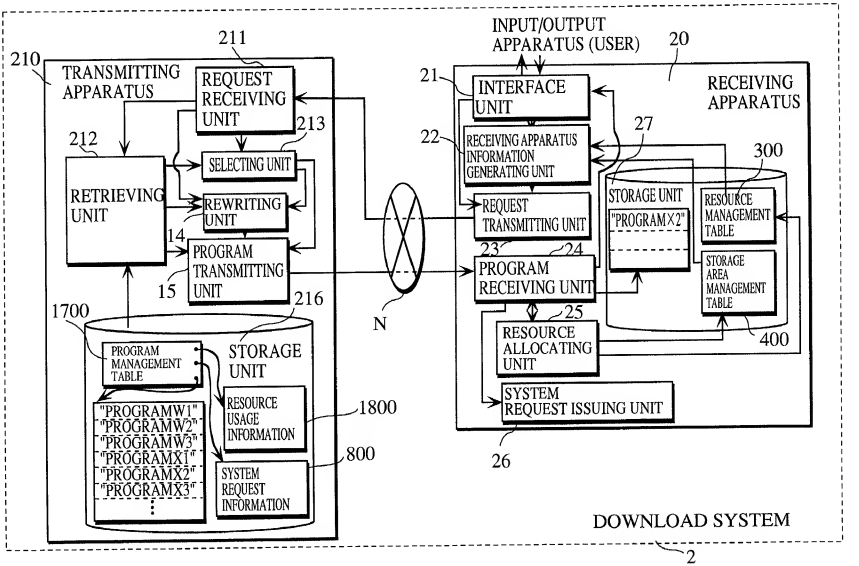
INPUT/OUTPUT APPARATUS (USER)
20
210
TRANSMITTING APPARATUS
211
REQUEST RECEIVING UNIT
213
SELECTING UNIT
212
RETRIEVING UNIT
REWRITING UNIT
14
PROGRAM TRANSMITTING UNIT
15
216
1700
PROGRAM MANAGEMENT TABLE
STORAGE UNIT
"PROGRAMW1"
"PROGRAMW2"
"PROGRAMW3"
"PROGRAMX1"
"PROGRAMX2"
"PROGRAMX3"
RESOURCE USAGE INFORMATION
1800
SYSTEM REQUEST INFORMATION
800
N
21
INTERFACE UNIT
22
RECEIVING APPARATUS INFORMATION GENERATING UNIT
REQUEST TRANSMITTING UNIT
23
24
PROGRAM RECEIVING UNIT
25
RESOURCE ALLOCATING UNIT
SYSTEM REQUEST ISSUING UNIT
26
RECEIVING APPARATUS
27
300
STORAGE UNIT
"PROGRAMX2"
RESOURCE MANAGEMENT TABLE
STORAGE AREA MANAGEMENT TABLE
400
DOWNLOAD SYSTEM
2

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FIG. 17

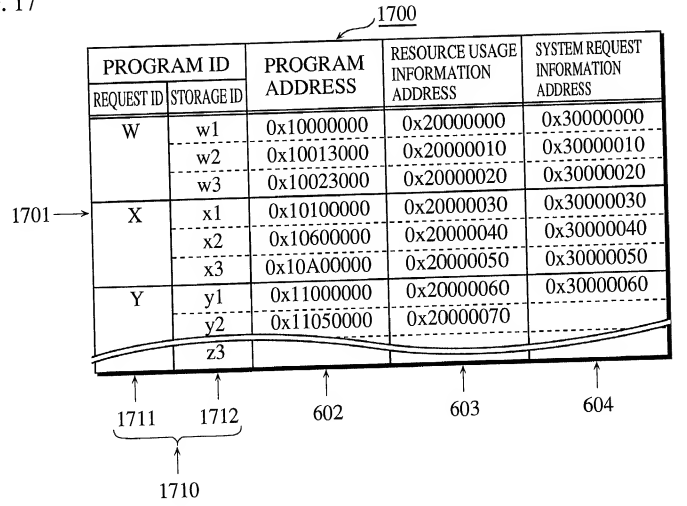
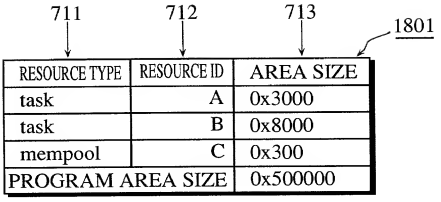
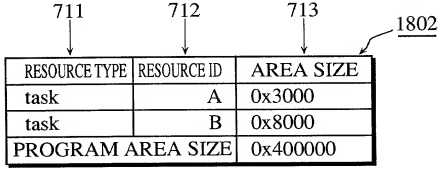


FIG. 18A



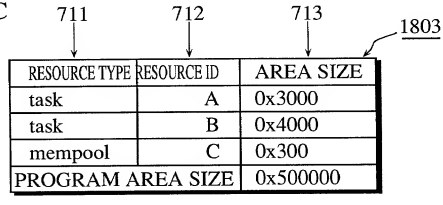
RESOURCE TYPE	RESOURCE ID	AREA SIZE
task	A	0x3000
task	B	0x8000
mempool	C	0x300
PROGRAM AREA SIZE		0x500000

FIG. 18B



RESOURCE TYPE	RESOURCE ID	AREA SIZE
task	A	0x3000
task	B	0x8000
PROGRAM AREA SIZE		0x400000

FIG. 18C



RESOURCE TYPE	RESOURCE ID	AREA SIZE
task	A	0x3000
task	B	0x4000
mempool	C	0x300
PROGRAM AREA SIZE		0x500000

FIG.19

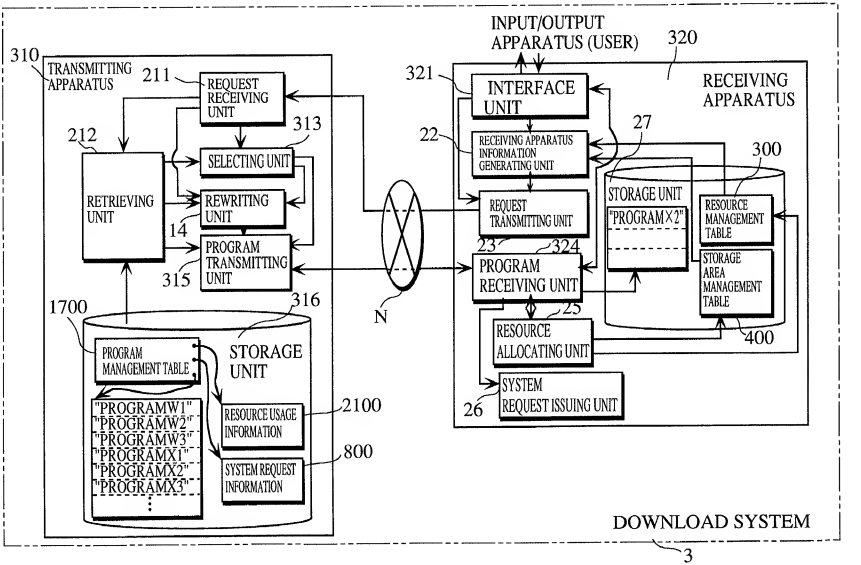

INPUT/OUTPUT APPARATUS (USER)
320
310
TRANSMITTING APPARATUS
211
REQUEST RECEIVING UNIT
321
INTERFACE UNIT
RECEIVING APPARATUS
212
313
SELECTING UNIT
22
RECEIVING APPARATUS INFORMATION GENERATING UNIT
27
300
RETRIEVING UNIT
REWRITING UNIT
14
REQUEST TRANSMITTING UNIT
STORAGE UNIT
"PROGRAMX2"
RESOURCE MANAGEMENT TABLE
PROGRAM TRANSMITTING UNIT
315
23
324
PROGRAM RECEIVING UNIT
STORAGE AREA MANAGEMENT TABLE
1700
316
N
25
RESOURCE ALLOCATING UNIT
400
PROGRAM MANAGEMENT TABLE
STORAGE UNIT
"PROGRAMW1"
"PROGRAMW2"
"PROGRAMW3"
"PROGRAMX1"
"PROGRAMX2"
"PROGRAMX3"
RESOURCE USAGE INFORMATION
2100
SYSTEM REQUEST INFORMATION
800
SYSTEM REQUEST ISSUING UNIT
26
DOWNLOAD SYSTEM
3

FIG.20

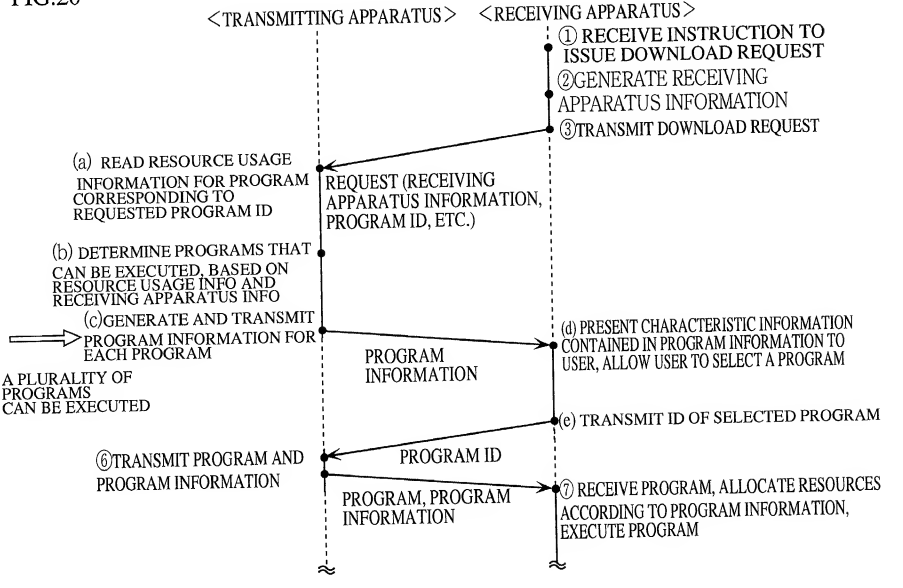

<TRANSMITTING APPARATUS>
<RECEIVING APPARATUS>
① RECEIVE INSTRUCTION TO ISSUE DOWNLOAD REQUEST
②GENERATE RECEIVING APPARATUS INFORMATION
③TRANSMIT DOWNLOAD REQUEST
(a) READ RESOURCE USAGE INFORMATION FOR PROGRAM CORRESPONDING TO REQUESTED PROGRAM ID
REQUEST (RECEIVING APPARATUS INFORMATION, PROGRAM ID, ETC.)
(b) DETERMINE PROGRAMS THAT CAN BE EXECUTED, BASED ON RESOURCE USAGE INFO AND RECEIVING APPARATUS INFO
(c)GENERATE AND TRANSMIT PROGRAM INFORMATION FOR EACH PROGRAM
A PLURALITY OF PROGRAMS CAN BE EXECUTED
PROGRAM INFORMATION
(d) PRESENT CHARACTERISTIC INFORMATION CONTAINED IN PROGRAM INFORMATION TO USER, ALLOW USER TO SELECT A PROGRAM
(e) TRANSMIT ID OF SELECTED PROGRAM
⑥TRANSMIT PROGRAM AND PROGRAM INFORMATION
PROGRAM ID
PROGRAM, PROGRAM INFORMATION
⑦ RECEIVE PROGRAM, ALLOCATE RESOURCES ACCORDING TO PROGRAM INFORMATION, EXECUTE PROGRAM

FIG. 21

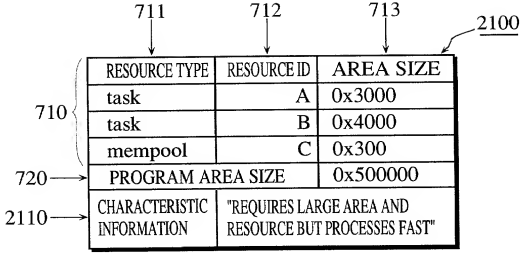

711
712
713
2100
RESOURCE TYPE
RESOURCE ID
AREA SIZE
710
task
A
0x3000
task
B
0x4000
mempool
C
0x300
720
PROGRAM AREA SIZE
0x500000
2110
CHARACTERISTIC INFORMATION
"REQUIRES LARGE AREA AND RESOURCE BUT PROCESSES FAST"

FIG. 22

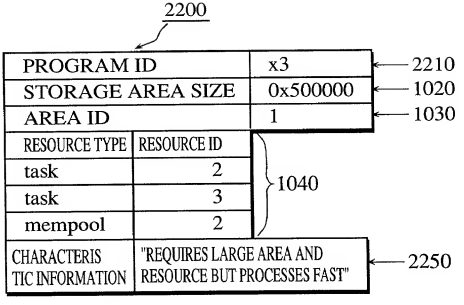

2200
PROGRAM ID
x3
2210
STORAGE AREA SIZE
0x500000
1020
AREA ID
1
1030
RESOURCE TYPE
RESOURCE ID
task
2
task
3
mempool
2
1040
CHARACTERIS TIC INFORMATION
"REQUIRES LARGE AREA AND RESOURCE BUT PROCESSES FAST"
2250

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FIG. 23

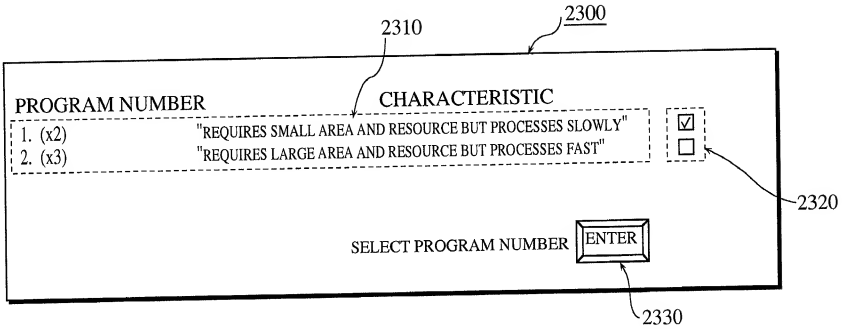

FIG.24

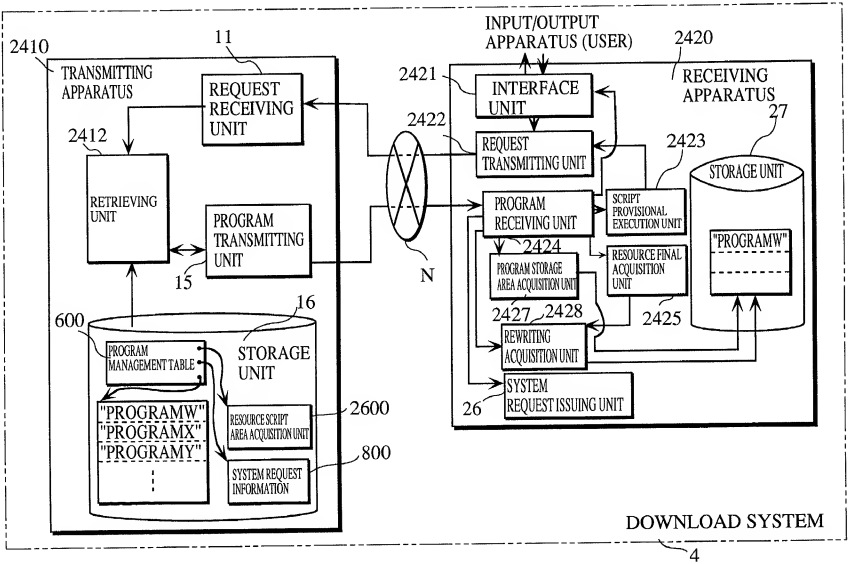
2410
11
TRANSMITTING APPARATUS
REQUEST RECEIVING UNIT
2412
RETRIEVING UNIT
PROGRAM TRANSMITTING UNIT
15
16
600
PROGRAM MANAGEMENT TABLE
STORAGE UNIT
"PROGRAMW"
"PROGRAMX"
"PROGRAMY"
RESOURCE SCRIPT AREA ACQUISITION UNIT
2600
SYSTEM REQUEST INFORMATION
800
N
INPUT/OUTPUT APPARATUS (USER)
2420
2421
INTERFACE UNIT
RECEIVING APPARATUS
27
2422
REQUEST TRANSMITTING UNIT
2423
STORAGE UNIT
PROGRAM RECEIVING UNIT
SCRIPT PROVISIONAL EXECUTION UNIT
"PROGRAMW"
2424
PROGRAM STORAGE AREA ACQUISITION UNIT
RESOURCE FINAL ACQUISITION UNIT
2427
2428
2425
REWRITING ACQUISITION UNIT
SYSTEM REQUEST ISSUING UNIT
26
DOWNLOAD SYSTEM
4

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FIG. 25

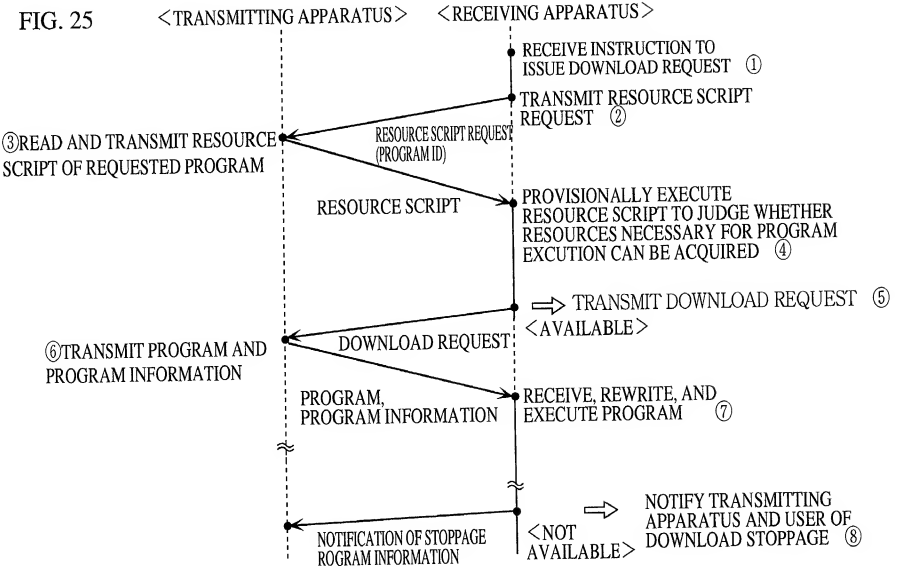

FIG.26

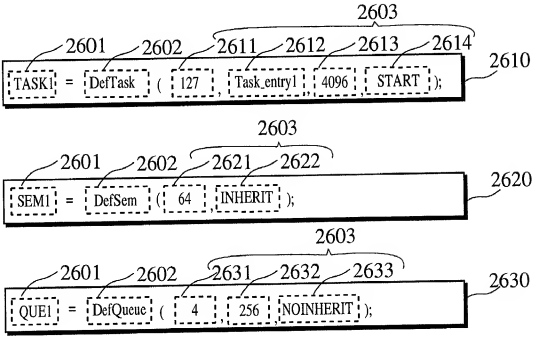
2603
2601
2602
2611
2612
2613
2614
TASK1 = DefTask (127 , Task_entry1 , 4096 , START);
2610
2603
2601
2602
2621
2622
SEM1 = DefSem (64 , INHERIT);
2620
2603
2601
2602
2631
2632
2633
QUE1 = DefQueue (4 , 256 , NOINHERIT);
2630

FIG. 27

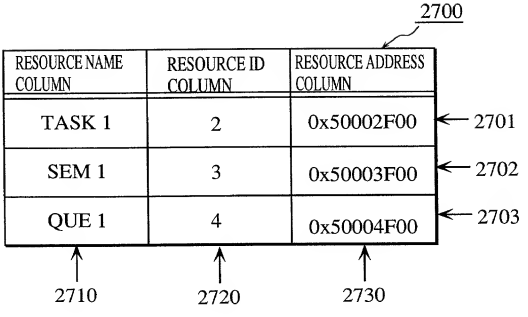
2700
RESOURCE NAME COLUMN
RESOURCE ID COLUMN
RESOURCE ADDRESS COLUMN
TASK 1
2
0x50002F00
2701
SEM 1
3
0x50003F00
2702
QUE 1
4
0x50004F00
2703
2710
2720
2730

FIG.28A

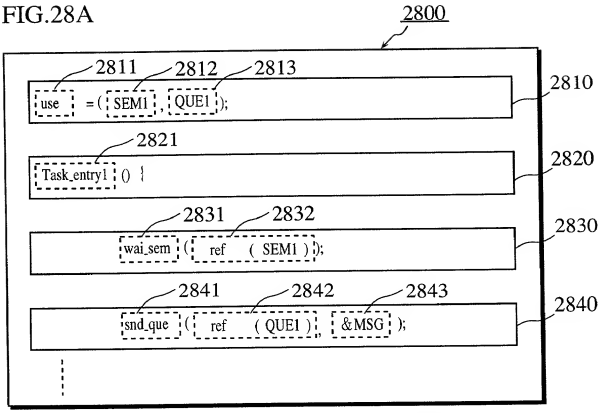

FIG.28B

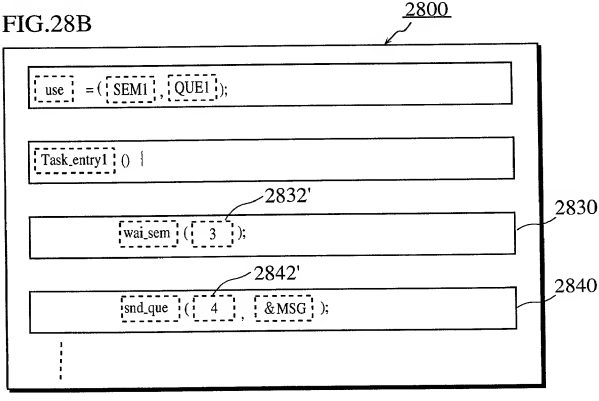

FIG. 29

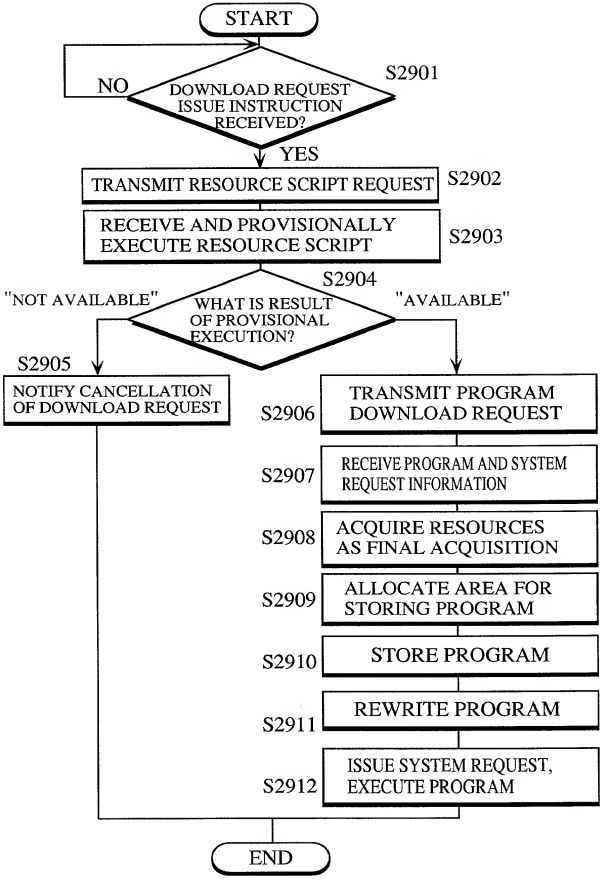

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FIG.30

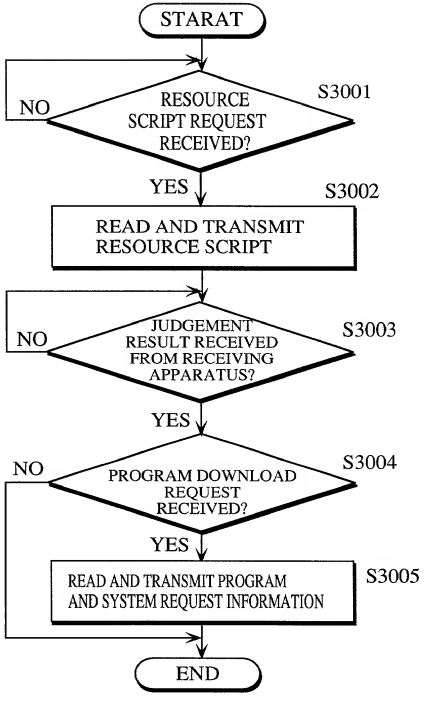

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FIG.31

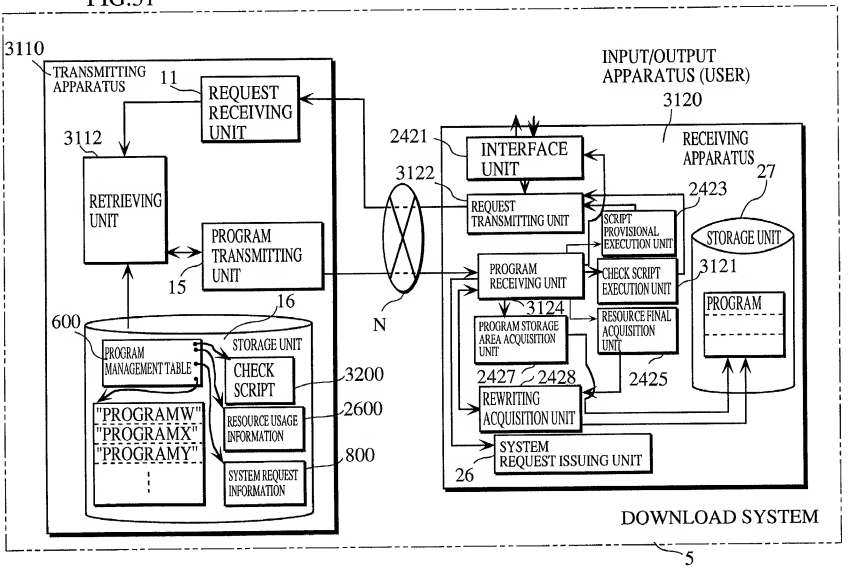

3110
TRANSMITTING APPARATUS
11
REQUEST RECEIVING UNIT
3112
RETRIEVING UNIT
PROGRAM TRANSMITTING UNIT
15
16
600
PROGRAM MANAGEMENT TABLE
STORAGE UNIT
CHECK SCRIPT
3200
"PROGRAMW"
"PROGRAMX"
"PROGRAMY"
RESOURCE USAGE INFORMATION
2600
SYSTEM REQUEST INFORMATION
800
N
INPUT/OUTPUT APPARATUS (USER)
3120
2421
INTERFACE UNIT
3122
RECEIVING APPARATUS
27
2423
REQUEST TRANSMITTING UNIT
SCRIPT PROVISIONAL EXECUTION UNIT
STORAGE UNIT
PROGRAM RECEIVING UNIT
CHECK SCRIPT EXECUTION UNIT
3121
PROGRAM
3124
PROGRAM STORAGE AREA ACQUISITION UNIT
RESOURCE FINAL ACQUISITION UNIT
2425
2427
2428
REWRITING ACQUISITION UNIT
SYSTEM REQUEST ISSUING UNIT
26
DOWNLOAD SYSTEM
5

FIG. 32A

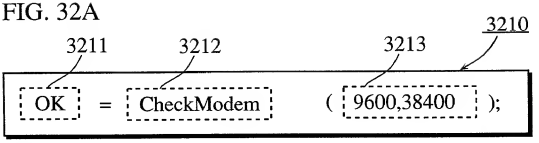


FIG. 32B

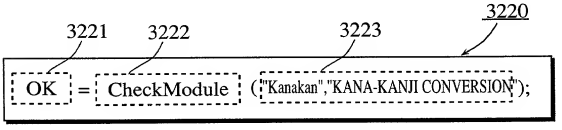
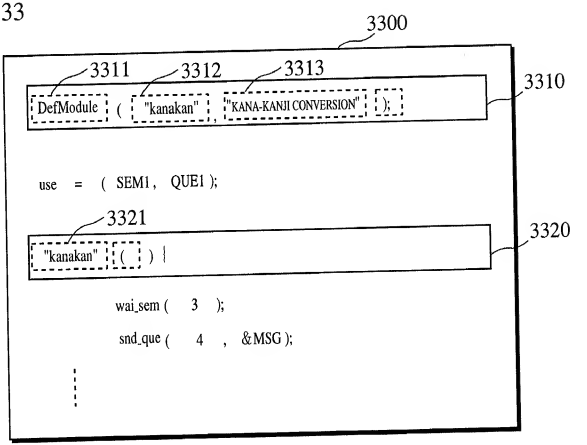


FIG.33


3300
3311
3312
3313
3310
DefModule ("kanakan" , "KANA-KANJI CONVERSION");
use = (SEM1 , QUE1);
3321
3320
"kanakan" ( ) {
wai_sem (3);
snd_que (4 , &MSG);